SOLIDWORKS Composer: The correct way to import any CAD model

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SUBJECT:	Best practices when importing any CAD model

SOLIDWORKS Composer is installed independent from SOLIDWORKS CAD and not dependent on any single CAD tool. Because of this it works with many different types of 3D models. As this makes the product robust it also can create issues when importing 3D models. Depending on what type of model and how it was modeled will affect the proper way of importing it into Composer.

SOLIDWORKS Composer Import Methods

The most important step when working within SOLIDWORKS Composer is the first step, importing your models correctly. This section covers the basics and identifies what each import option is for.

1. **Open:** Directly opens a CAD model and puts the model at the top of the assembly tree. Because of this structure the only time you will want to use the direct Open option is when working with Composer Projects. Composer Projects are covered in a 4-part video series found here. Unless you have to use Projects, avoid using the direct Open option, as it will limit how many models you can independently import into a given Composer document while keeping all models associative back to the original CAD files.
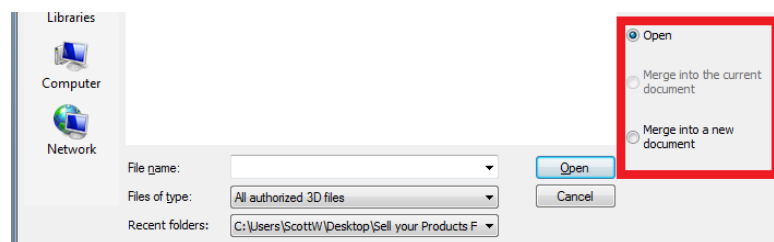
2. **Merge into the current document:** Merges the CAD model into the currently open Composer document under a dummy "ROOT" top level assembly. Because of this method of import the imported CAD model isn't tied directly to the Composer document and multiple CAD files and formats can be imported in while staying associated to their parent CAD model. This is the ideal option for bringing a new CAD model into an existing Composer document. Watch the video "**When and when NOT to use Projects**" for more details on multiple file update limitations.

3. **Merge into a new document:** Merges the CAD model into a new Composer document under a dummy "ROOT" top level assembly. This imports the CAD model exactly like the **Merge into the current document** but creates a new document instead of importing into one that is currently open. This is the ideal option for starting a new Composer document.

SOLIDWORKS Composer Import Settings

It is important to note that for any Composer document all settings for both import and update must stay the same, or the update will not work correctly.

These are the options that are critical to importing and updating a document successfully. Each one has a specific function and should be understood.
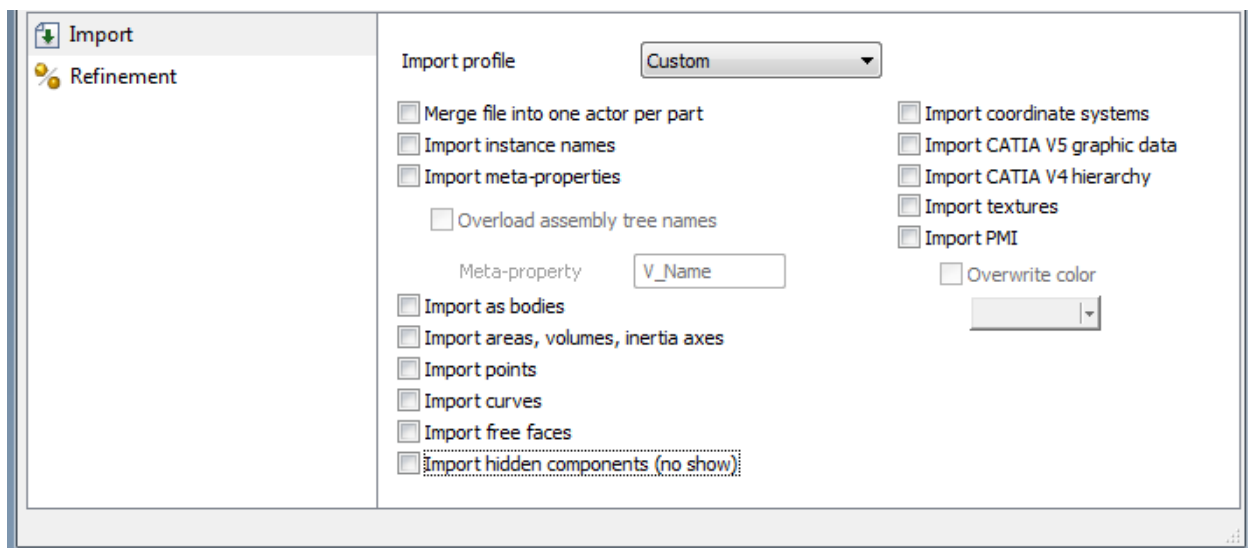

- **Merge file into one actor per part:** This is the first option in the list and by far the most important. This option, when toggled on, will treat every imported part as a solid part and every assembly as groupings of solid parts. With that said if you import a SOLIDWORKS assembly with this option turned on; it will see the each assembly as a bucket of parts and each part as an individual part. If you import a SOLIDWORKS assembly with this option turned off, it will still see each assembly as a bucket of parts but it will potentially also see each part as a possible grouping of individual components. If you have any parts within your assembly that have multiple bodies this could potentially be a huge issue, since each multi-body part is imported as an assembly. The reason why this is a potential issue is because Composers import and update is dependent on file names. If you rename a file, Composer will no longer recognize it during update. In each multi-body part each body has a name and Composer is linking to this name. If any of the bodies of that part are renamed in SOLIDWORKS, which happens automatically when making model changes within SOLIDWORKS, then Composer will no longer see them as the same original part that was imported. If you turn on this option when importing a neutral file type such as a .STP "STEP" then the model will be imported as a single merged 3D model. If you

import the same file with this option turned off it will look into the .STP file and break it down into its assembly tree and part levels, assuming it was modeled with a CAD tool that uses an assembly tree.

- **Import instance names:** This option only applies if you are trying to open a Composer document made prior to 2012, where individual item count needs to be in the tree naming structure.
- **Import meta-properties:** It's a good idea to always have this option on as meta-properties can only benefit a document. Currently only meta-properties "custom properties" will import from SOLIDWORKS models but you never know when support will be added for other file types, so as a general rule always have this checked. The additional **Overload assembly tree names** option will allow renaming of items in the tree and should only be used in specific situations where renaming the tree items is a requirement.
- **Import as bodies:** This option will try to import the incoming model into a solid body. Depending on the model this might not be possible and unchecking it will import the model as segmented surfaces.
- **Import areas, volumes, inertia axis: Import points: Import curves: Import coordinate systems: Import CATIA V5 graphic data: Import CATIA V4 hierarchy: Import PMI:** All of these options elude to possible future importing options in the software for PMI data. Today these options don't do anything.
- **Import free faces:** Imports any surface for face geometry, unchecking will ignore anything that is not a solid model.
- **Import hidden components (no show):** This will import any model data that is hidden, anything suppressed will not import into Composer regardless of this option. Unchecking this will ignore anything hidden during import.
- **Importing textures**: It is possible to import the texture information from SOLIDWORKS to Composer; however doing so will break any possibility of later updating the model if a CAD change has been made. To do this export the SOLIDWORKS model as a 3DXML from SOLIDWORKS and import that 3DXML into Composer using this option.
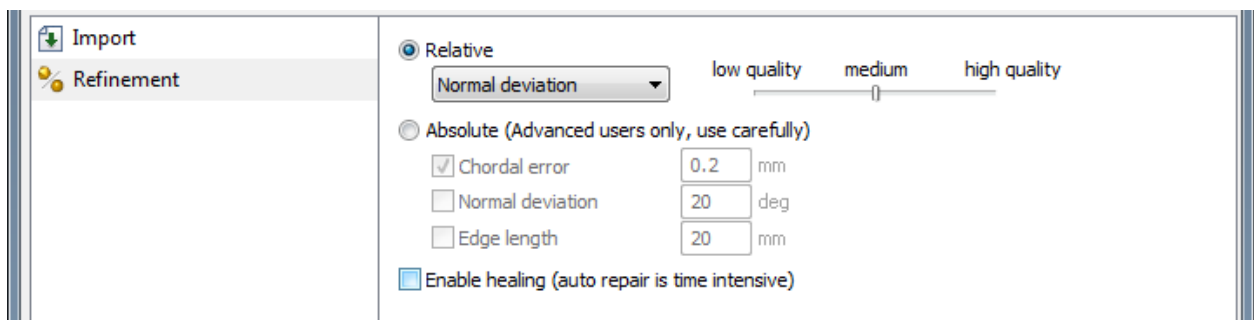

On the left side of this window there is a **Refinement** option. Think of this as a quality import slider. Medium quality is the default setting; sliding the bar in either direction will wither decrease or increase the edge quality level and will affect both the file size and performance. Note that when importing multiple models into Composer you can control the quality per model, only bringing in the most important components at higher quality.

SOLIDWORKS Composer Import Situations

Each situation requires a slightly different set of import options. The remainder of this document will cover the most common situations.

- **Standard SOLIDWORKS Assembly:** When importing from SOLIDWORKS there are two options. Option #1 import the models from a File>Open from Composer or export the Composer file from SOLIDWORKS using a File>Save As>.SMG. Either way the settings options remain the same.
  Note, when exporting from SOLIDWORKS as an .SMG there are no export settings, when this process is used SOLIDWORKS will use the installed Composer or Composer Player software default settings for export. You will want to jump into either Composer or the Composer Player, whichever is installed, and adjust the default document properties import settings.
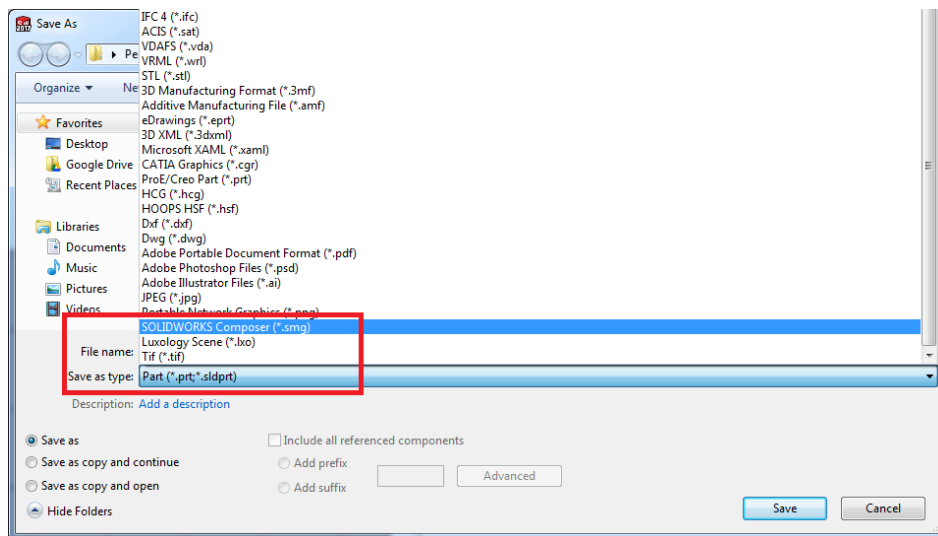
A Standard SOLIDWORKS Assembly is a SOLIDWORKS assembly that has parts and/or sub-assemblies with corresponding assemblies and parts within the sub-assemblies.

In this scenario the ideal settings would be to have "merge file into one actor per part", "import meta-properties", and "import as bodies". The "import hidden components (no show)" is completely optional depending on if you want any hidden components to import or not.
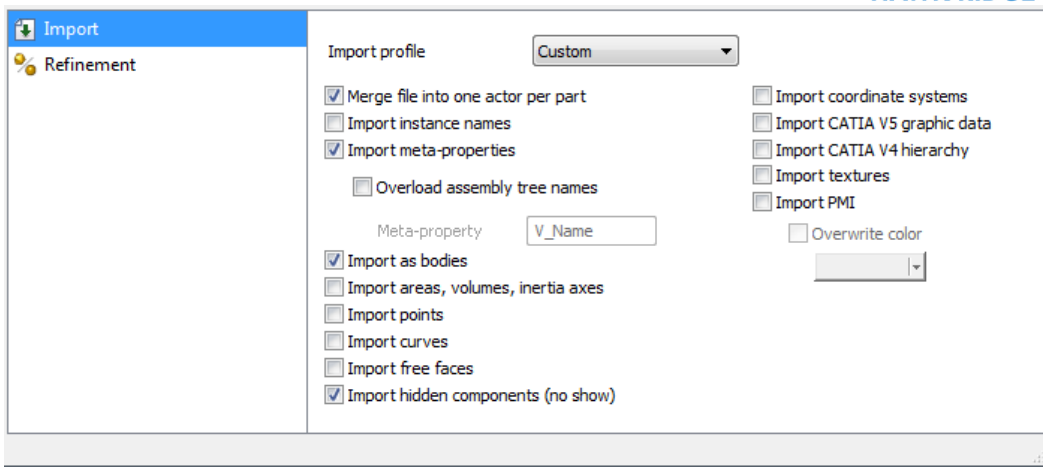
If there are multi-body parts or weldments within this assembly, that need to be exploded, these parts will need to be imported independently. Note, if your assembly has multi-body parts or weldments the first set of options are completely usable as long as you do not need to create exploded views of the individual bodies.

If you do need to create exploded views of these multi-body or weldment parts they can be imported into the existing Composer document by slightly tweaking the settings.

To do this, import the entire assembly using the settings above, after import hide anything that you are going to re-import separately.
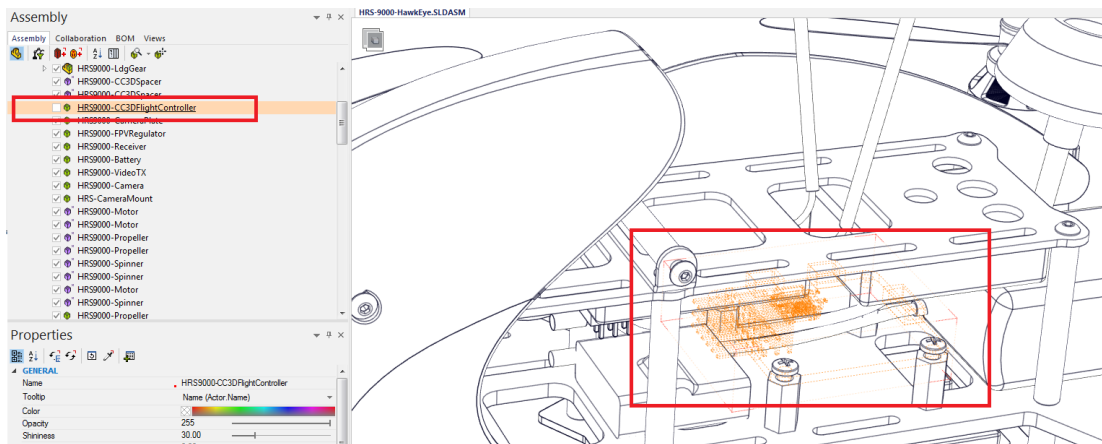
Re-import the same component(s) that were hidden "merge into the current document" and turn off "merge file into one actor per part".
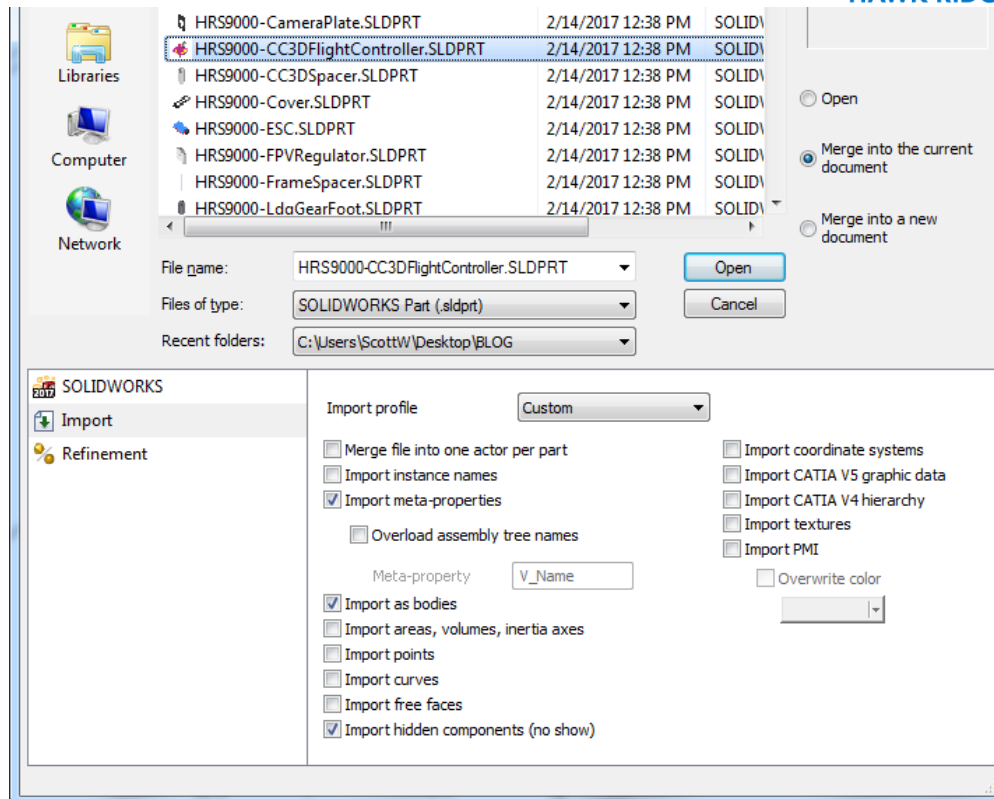
Once imported the new multi-body part or weldment will import as a separate assembly directly under the Root level and will most likely need to be mated into place using Composer's align tools. This new assembly can be exploded and can be updated if the original model changes.
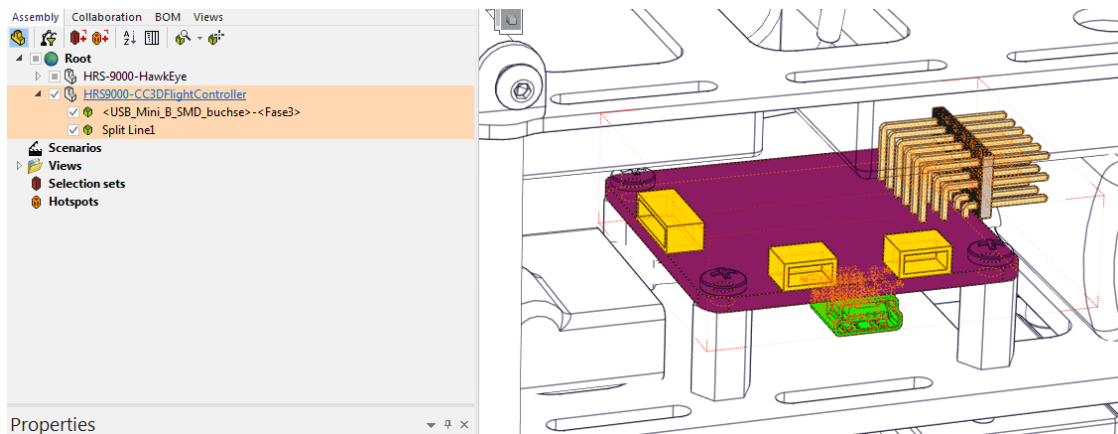
- **Any non-SOLIDWORKS, non-neutral model format**, such as Inventor or Pro-E: When directly importing any non-SOLIDWORKS CAD models directly into Composer without using a neutral CAD format, such as .STP, will require the free corresponding player installed for that file type. For instance if you are importing an Inventor file, you will have to have Inventor Viewer installed alongside Composer for the import to work.

During import turn off "merge file into one actor per part" or the model, depending on the file type" could potentially import as a solid part. "Import hidden components (no show)" should be turned on or needed components may not import. "Import free faces" may or may not need to be turned on, depending on if the file contains any surface geometry or not.
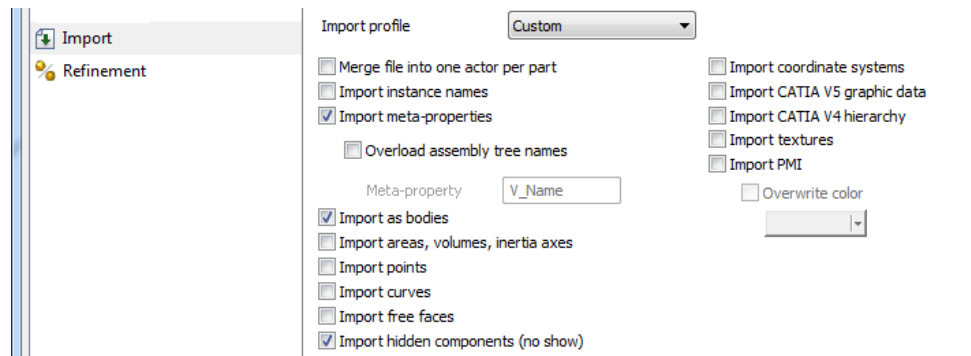
Each CAD model can be imported individually into a single Composer document, creating a top-level assembly of nested components.

- **Any neutral model format**, such as .STP, .IGS, .STL: There are no standard settings for these files and they will need to be individually tested. Most CAD programs can export into these formats and each program models and exports a little differently and there is no way to tell from the file how it's structured until it's imported. If you know how it was modeled and exported then it makes the import settings easier to estimate.
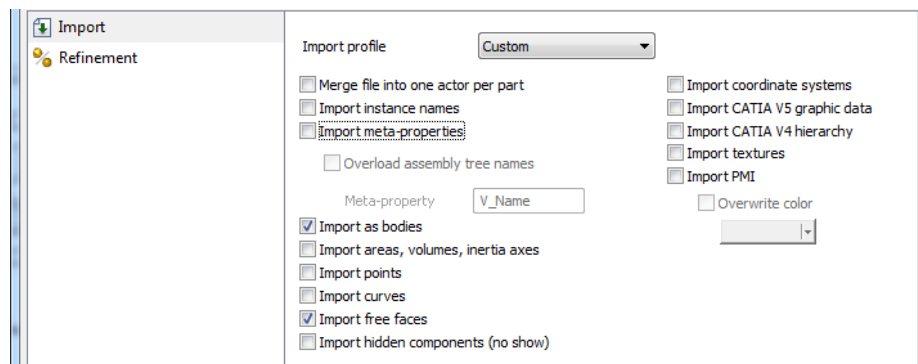
Typically only two settings are needed for these situations, "import as bodies" and "import free faces". Depending on how it imports the settings may need to be adjusted and imported again. Say you are importing a .STL and using these settings and a solid mass imports. In that case I try again and turn off "import as bodies". The resulting import will have tons of faces but at least the faces can be grouped together and exploded in order to create step-by-step instructions.

Using these combinations virtually any CAD model can effectively be imported into Composer. When multiple models, using multiple combinations, are imported into Composer a robust document is created. This document will keep each of these imports independent while allowing all of them to interact with each other.